

# ***Col5a2* Cas9-KO Strategy**

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# Project Overview

**Project Name**

*Col5a2*

**Project type**

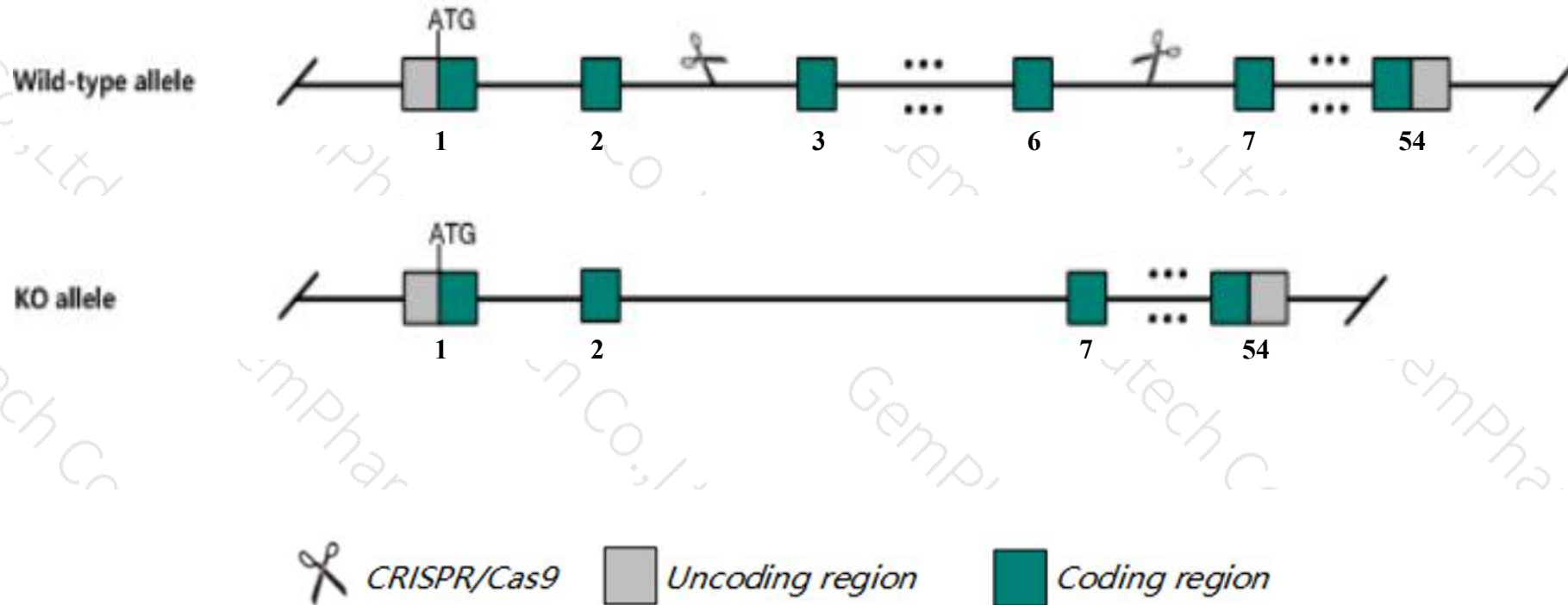
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Col5a2* gene. The schematic diagram is as follows:



- The *Col5a2* gene has 4 transcripts. According to the structure of *Col5a2* gene, exon3-exon6 of *Col5a2-201* (ENSMUST00000086430.4) transcript is recommended as the knockout region. The region contains 134bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Col5a2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutation of this gene results in perinatal lethality. Mutant animals exhibit reduced body weight, reduced bone growth rate, thin, fragile skin, variable degrees of lordosis and kyphosis, abnormal localization of hair follicles in the dermis, and thinned stroma of the cornea.
- The *Col5a2* gene is located on the Chr1. If the knockout mice are crossed with other mice strains to obtain double gene positive homozygous mouse offspring, please avoid the two genes on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risk of the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information (NCBI)

## Col5a2 collagen, type V, alpha 2 [ *Mus musculus* (house mouse) ]

Gene ID: 12832, updated on 10-Oct-2019

### Summary

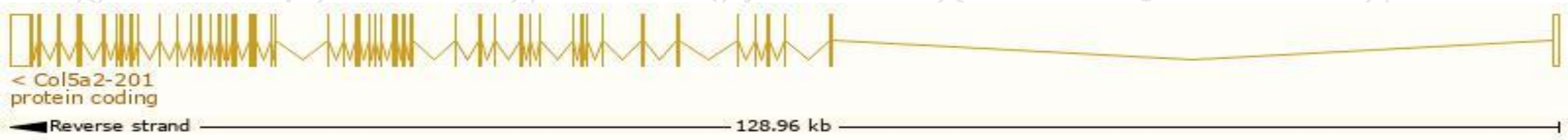
Official Symbol	Col5a2 provided by <a href="#">MGI</a>
Official Full Name	collagen, type V, alpha 2 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:88458</a>
See related	<a href="#">Ensembl:ENSMUSG00000026042</a>
Gene type	protein coding
RefSeq status	REVIEWED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110014L14Rik
Summary	This gene encodes the alpha-2 subunit of type V collagen, one of the low abundance fibrillar collagens that gets incorporated into growing fibrils with type I collagen. The encoded protein, in association with alpha-1 and/or alpha-3 subunits, forms homo- or heterotrimeric type V procollagen that undergoes proteolytic processing. Mice lacking the encoded protein die in utero. Transgenic mice that produce a structurally abnormal form of the encoded protein survive poorly and exhibit skin fragility, skeletal abnormalities and alterations in the collagen fiber organization. [provided by RefSeq, Dec 2015]
Expression	Biased expression in limb E14.5 (RPKM 56.0), bladder adult (RPKM 29.0) and 14 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

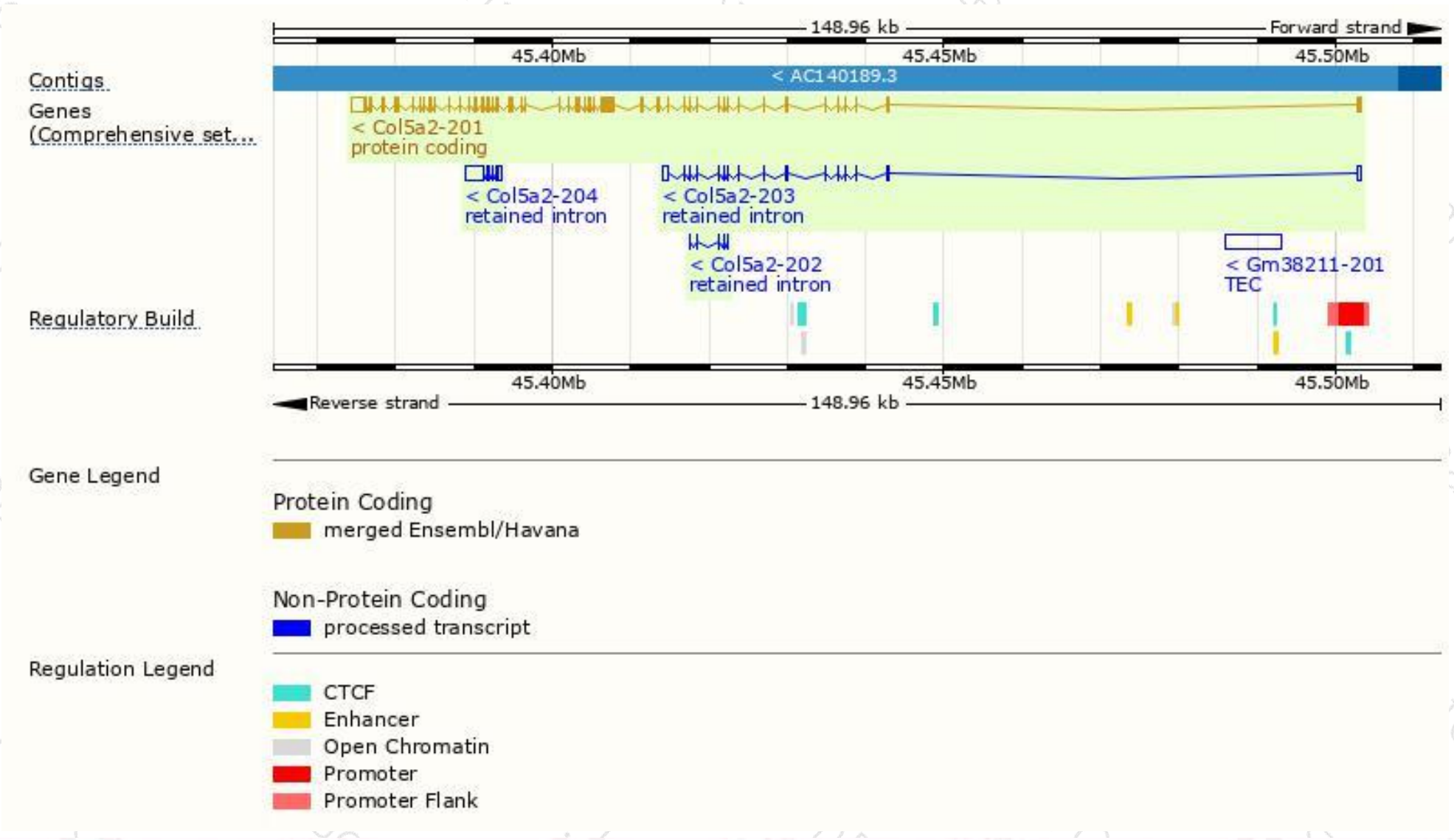
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Col5a2-201	<a href="#">ENSMUST00000086430.4</a>	6625	<a href="#">1497aa</a>	Protein coding	<a href="#">CCDS35555</a>	<a href="#">Q3U962</a>	TSL:1 GENCODE basic APPRIS P1
Col5a2-204	<a href="#">ENSMUST00000150143.1</a>	2951	No protein	Retained intron	-	-	TSL:2
Col5a2-203	<a href="#">ENSMUST00000134681.7</a>	1970	No protein	Retained intron	-	-	TSL:2
Col5a2-202	<a href="#">ENSMUST00000131535.1</a>	356	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Col5a2-201* transcript,The transcription is shown below

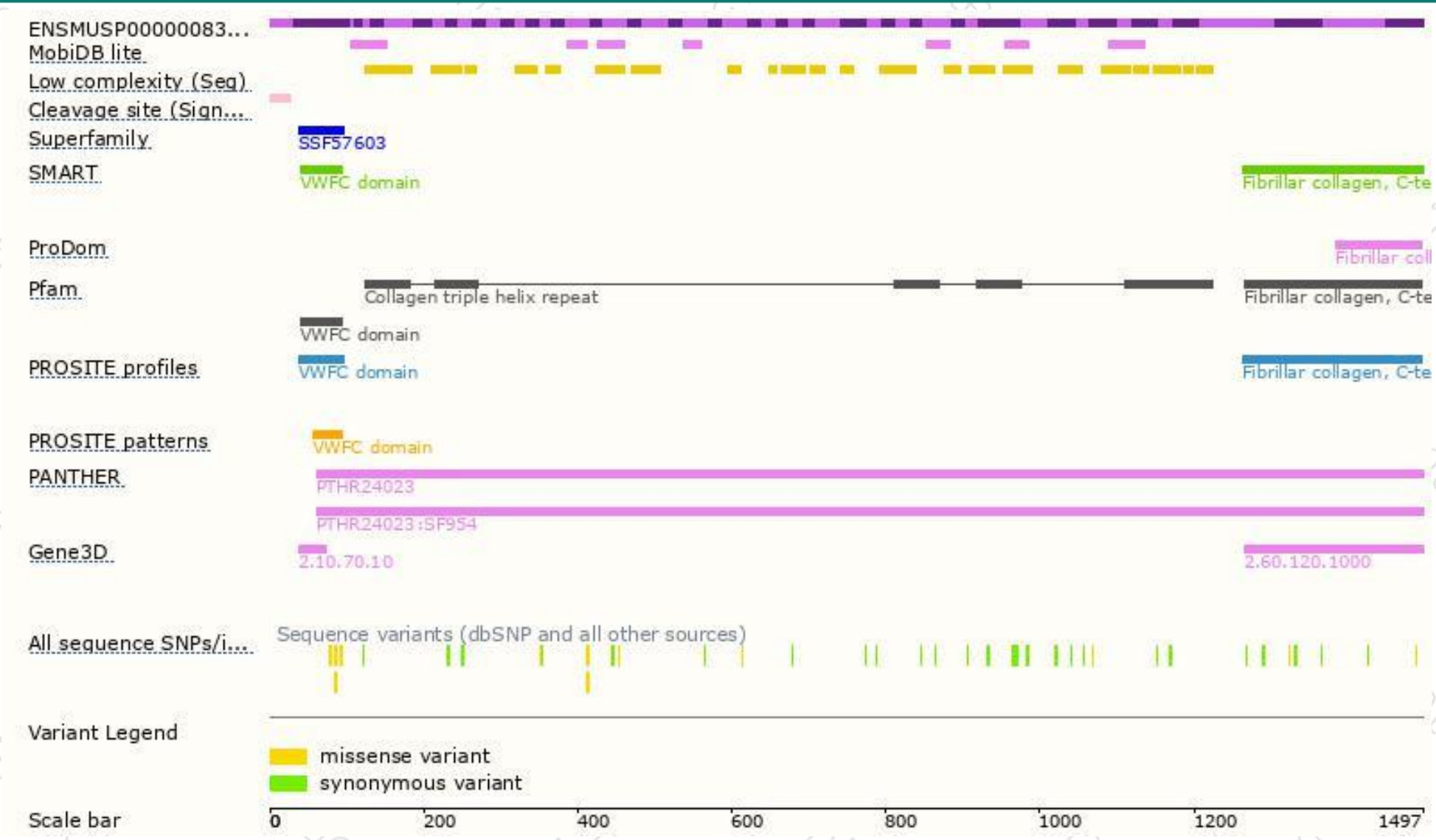


# Genomic location distribution

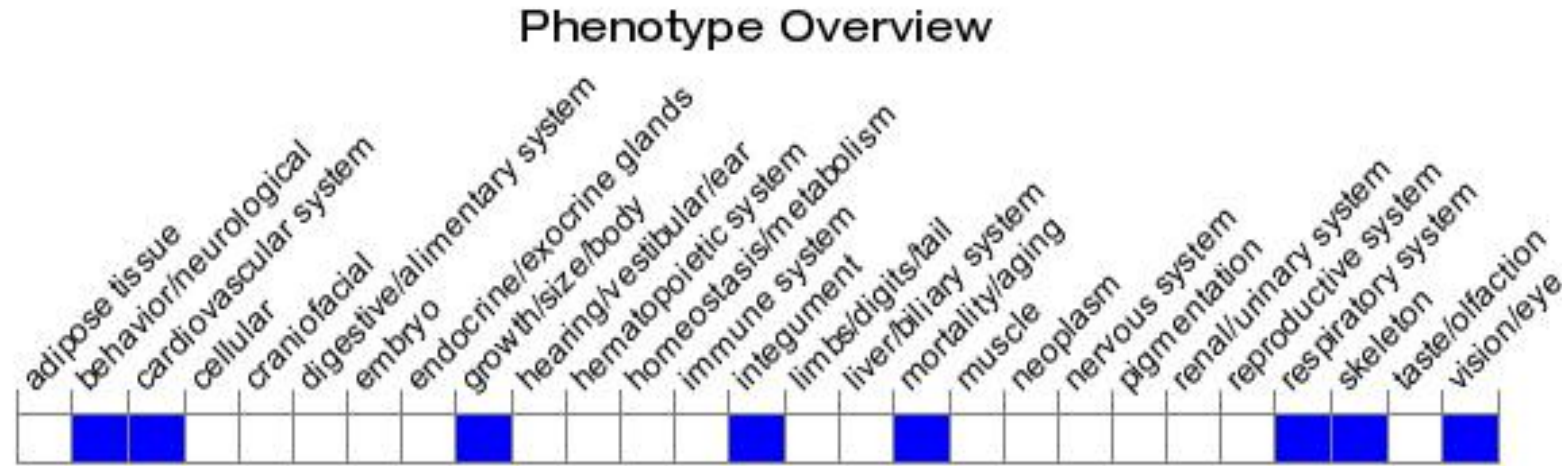




# Protein domain



# Mouse phenotype description(MGI )



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).*

According to the existing MGI data, Homozygous mutation of this gene results in perinatal lethality. Mutant animals exhibit reduced body weight, reduced bone growth rate, thin, fragile skin, variable degrees of lordosis and kyphosis, abnormal localization of hair follicles in the dermis, and thinned stroma of the cornea.

If you have any questions, you are welcome to inquire.

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